

CLAIMS

W.B. 1. Process for the manufacture of a composite product obtained by the association of glass threads and of a thermoplastic organic material in the filamentary state, which consists:

- in continuously depositing onto a moving substrate glass threads of which at least 80 % by weight thereof are commingled threads consisting of glass filaments and of filaments of thermoplastic organic material which are intimately blended, the quantity of glass deposited representing more than 40 % by weight of the total quantity of material deposited in the form of glass threads and of organic material,
- 15 - in transferring this glass threads-organic material combination into a number of zones where the said combination is heated, compressed and cooled, the heating and/or the cooling of the said combination being simultaneously accompanied by its compression,
- 20 - in cutting up the said combination in the form of sheets or in winding it onto a rotating drum.

2. Process according to Claim 1, characterized in that the substrate is a strip of fabric formed by glass threads of which at least a portion thereof are commingled threads consisting of glass filaments and of filaments of thermoplastic organic material.

3. Process according to Claim 1, characterized in that the substrate is a conveyor.

4. Process according to any one of the preceding 30 claims, characterized in that the glass threads and the material which are deposited are exclusively in the form of at least one strip of fabric and/or of knit formed at least partially by commingled threads.

5. Process according to any one of claims 1 to 3, 35 characterized in that the deposited material is exclusively in the form of chopped threads.

*Cannot be - must be
for nonwoven only*

Claim 1

~~a~~ ~~Sub D2~~ 6. Process according to any one of Claims 1 to 3, characterized in that, ~~the deposited material~~ said one layer is exclusively made up of continuous threads.

~~a~~ ~~b2~~ 7. Process according to any one of Claims 1 to 3, 5 characterized in that at least one strip of fabric and/or of knit which are formed at least partially of commingled threads is deposited onto the substrate and in that at least one sheet of commingled threads, chopped or continuous, is also deposited, the said 10 sheet(s) being brought into contact with at least one of the faces of the said strip(s), and then the sheet(s) of threads-strip(s) of fabric and/or knit combination thus formed is heated and is compressed on its two faces before being cooled and cut up or wound.

15 8. Process according to Claim 7, characterized in that:

- a) - a sheet of chopped commingled threads is deposited onto a moving conveyor,
- b) - a strip of fabric formed exclusively by 20 commingled threads is deposited onto the said sheet,
- c) - a second sheet of chopped commingled threads is optionally deposited onto the strip of fabric,
- d) - the sheet(s)-strip(s) combination thus formed is transferred into a first zone where the said 25 combination is heated and then into a second zone where the said combination is simultaneously compressed and heated,
- e) - the said combination is then transferred into a third zone in which it is compressed and cooled,
- 30 f) - the said combination thus cooled is cut up at the exit of the third zone.

9. Process according to Claim 7, characterized in that:

- a) - a first strip of fabric formed exclusively by 35 commingled threads is deposited onto a moving conveyor,
- b) - a sheet of chopped commingled threads is deposited onto this strip,

c) - a second strip of fabric exclusively formed by commingled threads is deposited onto this sheet,

d) - a second sheet of chopped commingled threads is optionally deposited onto this latter strip of fabric,

5 e) - the strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone where the said combination is simultaneously compressed and heated,

10 f) - the said combination is transferred into a third zone in which it is compressed and cooled,

g) - the combination thus cooled is cut up at the exit of the third zone.

10. Process according to Claim 7, characterized in
15 that:

a) - a first strip of fabric formed exclusively by commingled threads is deposited onto a moving conveyor,

b) - one or more continuous commingled threads are deposited onto this strip,

20 c) - a second strip of fabric formed exclusively by commingled threads is deposited onto the said continuous thread(s),

d) - one or more continuous commingled threads or a sheet of chopped commingled threads is optionally deposited onto this latter strip of fabric,

25 e) - this strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone where the said combination is simultaneously compressed and heated,

30 f) - the said combination is transferred into a third zone in which it is compressed and cooled,

g) - the combination thus cooled is cut up at the exit of the third zone.

35 11. Process according to any one of claims 7 to 10, characterized in that the width of the sheet(s) of commingled threads is equal to the width of the

Claim 7

strip(s) of fabric and/or of knit with which it is (they are) combined.

Claim 1

Sub E3

12. Process according to ~~any one of the preceding claims~~, characterized in that the weight of glass which is deposited represents at least half of the total weight of material deposited onto the conveyor.

Sub B3

13. *Claim 8* Device for implementing the process according to ~~either of Claims 8 and 9~~, characterized in that it includes: a storage device for windings of commingled threads, a cutter fed with the continuous threads extracted from the said windings, one or more devices ensuring the transfer, the storage and the distribution of the chopped commingled threads in the form of sheet(s), at least one device with a small barrel supporting at least two rolls of fabric of commingled threads, a conveyor onto which the said chopped threads and the strip(s) of fabric are deposited, a preheating oven placed at the end of the conveyor, a twin-belt press comprising heating drums in its upstream portion, cooled rolls in its downstream portion and, in its central portion, a heating zone followed by a cooling zone, and, lastly, an automatic guillotine device.

14. *Claim 10* Device for implementing the process according to Claim 10, characterized in that it includes: a storage device for windings of commingled threads, a conveyor onto which the commingled threads are deposited in the form of strips of fabric and of continuous threads and, optionally, of chopped threads, upstream of the said conveyor a first device with a small barrel supporting at least two rolls of fabric, above the conveyor one or more devices for distribution of continuous commingled threads, downstream a second device with a small barrel supporting at least two rolls of fabric followed optionally by a second device for distribution of continuous thread or by a cutter and by a device for distribution of chopped threads, a preheating oven placed at the end of the conveyor, a twin-belt press comprising heating drums in its

upstream portion, cooled rolls in its downstream portion and, in its central portion, a heating zone followed by a cooling zone, and, lastly, an automatic guillotine device.

Add A'